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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,516	03/09/2004	Dale Crombez	81044472 / FMC 1643 PUS	2515

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EXAMINER	
SCHWARTZ, CHRISTOPHER P	
ART UNIT	**PAPER NUMBER**
3683	

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/708,516	CROMBEZ ET AL.	
	Examiner	Art Unit	
	Christopher P. Schwartz	3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

CHRISTOPHER P SCHWARTZ
PRIMARY EXAMINER

CHRISTOPHER P. SCHWARTZ
PRIMARY EXAMINER

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's response filed 9/29/05 has been received and considered. No substantive amendment to define over the prior art has been made to the independent claims.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-5,13-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider '470 in view of US publication to Hara et al. '266.

Regarding claims 1,13,18 Schneider discloses a combined friction and regenerative braking system that can apportion the regenerative braking based upon predetermined vehicle conditions such as imminent wheel lock-up. Note the

microprocessor based control units at 38,52. The device also includes front to rear brake proportioning control of the overall braking forces. Please refer to the discussion in column 5 in its entirety.

Schneider lacks a specific discussion of reducing the regenerative braking torque to zero, although presumably this happens to avoid any uncomfortable sensation to the driver upon excessive deceleration, such as when the vehicle enters ABS mode.

The reference to Hara et al. is more clear in this regard. See the abstract, the discussion in paragraphs 0007, 0008, 0077 in their entirety. Applicants should however review this entire document for the "vehicle conditions" discussed therein.

As broadly claimed by applicant the first and second vehicle conditions and first and second predetermined values could just about be anything under the sun with regard to the vehicle driving condition. This reasoning is somewhat substantiated in applicants dependent claims. For instance vehicle deceleration may be determined from vehicle speed. The vehicle speed may be determined from wheel speed. Pedal position or rate of depression thereof may be used to estimate braking force applied to the wheels, which may in turn be used to determine brake torque etc.

Such "conditions" and "values" as broadly claimed are notoriously well known in the art. The references to Schneider and Hara et al. generally teach this throughout their disclosures even if not discussed with any degree of particularity. Further the prior art of record cited but not relied upon also discuss these notoriously well known limitations. Applicant should carefully review the prior art cited for a teaching of the general knowledge available to the ordinary skilled worker in the art.

It would have been obvious to the ordinary skilled worker in the art at the time of the invention to have incorporated the teachings of the reduction of regenerative braking force as taught by Hara into Schneider to improve overall driveability of the vehicle.

As broadly claimed the requirements of claims 2-5,14-17,19,20 are fairly suggested by the combined references above.

5. Claims 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider '470 in view of Hara et al. as applied to claims 6 above, and further in view of Crombez et al., Kuno et al., or Kidston et al..

Regarding claims 6, Schneider '470 in view of Hara et al., lack disclosing using predetermined "torque curves" to control the regenerative braking torque.

However such ideas, as broadly claimed, are well known in the art. Please see Crombez et al. col. 5 lines 10-25, Kidston et al. col 5 lines 15-52, and Kuno col. 7 lines 49+ over to col. 9.

One having ordinary skill in the art at the time of the invention would have found it obvious to have modified Schneider et al., as modified, with look up tables, torque maps or torque curves to adjust the regenerative braking torque to predetermined requirements such as rate of deceleration, level of battery charge, imminent activation of ABS or stability control modes as such a method would merely amount to an alternate equivalent method to that of Schneider et al., as modified by Hara.

Regarding claims 7-12 these limitations, as broadly claimed, are fairly suggested by the references above.

Response to Arguments

6. Applicant's arguments filed 9/29/05 have been fully considered but they are not persuasive. Applicant's state in their remarks "Nothing in the combination of Schneider or Hara et al. teaches or even suggests all of the claim limitations of amended claim 1". Applicant's remarks at pages 6-8 of their response are noted.

From a cursory reading of the prior art of record it is unclear to the examiner how applicant's representatives can come up with their analysis.

The references to Scheider and Hara clearly teach applicant's claimed limitations given the undue breadth of their claims. The reference to Schneider teaches a combined friction and regenerative braking system that includes front to rear apportioning control. Schneider is capable of measuring the vehicle speed, and therefore vehicle deceleration, with wheel speed sensors 40,42,44 and 46. See the discussion in col. 5 lines 15-30. Here Schneider states that "regenerative braking is disabled or reduced in accordance with the ABS mode entered". Therefore it should be readily apparent that a "first vehicle condition or predetermined value", as broadly claimed by applicants (such as any of the notoriously well known parameters listed in applicant's claim 2—and inherent in Schneider), must reach "a second vehicle condition" when the vehicle enters ABS mode (inherently an excessive amount of deceleration in Schneider) to "reduce or disable" the regenerative braking mode. Notwithstanding this argument however, note the discussion of the motor limitations, and voltages of the battery (i.e. vehicle conditions), that may also limit the regenerative braking torque.

The reference to Hara et al. is relied upon for a more specific disclosure of reducing the regenerative braking torque to zero upon certain vehicle conditions.

These references clearly teach, in combination, that in vehicles equipped with hybrid braking systems (i.e. friction and regenerative) it is well known to reduce the amount of regenerative braking, possibly to zero, simply dependent upon the vehicle reaching certain, or predetermined, operating conditions or values. It would be well within the expertise of the ordinary skilled worker in the art to adjust or change said vehicle conditions simply dependent upon the braking characteristics desired—perhaps to maximize the amount of regenerative power in the vehicle, to adjust the front-rear apportioning control with vehicles having different centers of gravity, or simply to reduce uncomfortable braking sensations to the driver (such as jerking movements).

Applicants are encouraged (again) to review all of the prior art references cited in the application as they have also been relied upon to establish notoriously well known concepts in the art as related to applicant's claimed limitations.

Although somewhat moot at this point (the examiner will withdraw the objection to the claims), in regards to applicants comments that "... deceleration is not determined or based on speed; rather it is defined as a rate of change of speed", -- it is unclear what this statement is suppose to mean. It seems with this statement applicants contradict their own line of reasoning.

The examiner simply stated deceleration is determined or based upon "speed" in the generic sense. Applicant's own example(s) of deceleration existing when the vehicle goes from 100 mph (a vehicle speed) down to 80 mph (another vehicle speed!!)

is correct. The vehicle deceleration is determined from, or based, upon these speeds over given time interval. It is then defined as the time rate of change of speed.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P. Schwartz whose telephone number is 571-272-7123. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jim McClellan can be reached on 571-272-6786. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cps
12/8/05

CHRISTOPHER P. SCHWARTZ
PRIMARY EXAMINER